

Utah Division of Wildlife Resources'

Attack Against the Invasion of

Quagga & Zebra Mussels

(2009 Boating Season Summary)

STATEWIDE SUMMARY

- **Budget, Personnel & Equipment**
 - **FY10 General Funds: \$1,400,000**
 - Aquatic Invasive Species Program—Aquatics \$1,098,524
 - 1 Statewide Coordinator (1.0 FTE)
 - 5 Region Biologists (5.0 FTE)
 - 31 Technicians--Educators & Boat Inspectors (11.0 FTE)
 - 31 Watercraft Decontamination Units purchased with General Funds between FY07-FY10 and assigned as follows
(assignment list includes 5 additional partner funded units):
Northern Region (8 units)--Bear Lake, East Canyon, Echo, Hyrum, Pineview (2), Rockport, Willard;
Central Region (7 units): Deer Creek, Jordanelle (2), Strawberry, Utah Lake (2), Yuba;
Southern Region (7 units): Fish Lake, Gunlock, Otter Creek, Panguitch, roving unit (Kolob, Minersville, Pine Valley, Piute, Sand Cove), Sand Hollow, Quail Creek;
Northeast Region (7 units): Flaming Gorge (3), Pelican, Red Fleet, Starvation, Steinaker;
Southeastern Region (7 Units): Electric Lake, Huntington North, Joe's Valley, Millsite, Scofield (2), Recapture.
 - Aquatic Invasive Species Program—Natural Heritage \$2,887
 - 1 Natural Heritage Biologist (0.05 FTE)
 - Aquatic Invasive Species Program—Outreach \$79,554
 - 1 Outreach Specialist (1.0 FTE)
 - Aquatic Invasive Species Program—Enforcement \$219,035
 - 5 Region Conservation Officers (2.75 FTE)
 - **Partner Funds Provided to UDWR: \$407,861**
 - Funded technicians at specified waters—\$204,461
 - 23 Wildlife Technicians--Educators & Boat Inspectors (7.0 FTE)
 - Funded decontamination units at specified waters—\$203,400
 - 1 Trailer-mounted unit w/out reclaim system--Rockport
 - 2 Trailer-mounted units with reclaim systems—Joe's Valley & Electric Lake
 - 2 Semi-permanent units with reclaim systems—Red Fleet & Huntington North

Note: (1) In addition to the aforementioned funds, the U.S. Forest

- Service in FY09 purchased three additional trailer-mounted decontamination units without reclaim systems (\$13,400 each) and transferred them to UDWR for use at Pineview Reservoir, Flaming Gorge Reservoir and Panguitch Lake.
- (2) In addition to the aforementioned funds, the National Park Service has placed 5 decontamination units around Lake Powell at Wahweap & Bullfrog (\$450,000 combined cost for semi-permanent reclaim units); and Antelope Point, Hall's Crossing & Hite (\$22,000 cost each for trailer-mounted reclaim units).
 - (3) In addition to the aforementioned funds, the National Park Service during the 2009 boating season expended \$522,000 on a quagga & zebra mussel program to combat their arrival in Lake Powell.

- **Outreach**

- Utah's Aquatic Invasive Species Management Plan was approved by the national Aquatic Nuisance Species Task Force.
- Public presentations about aquatic invasive species were made in many places, including the Utah Boat Show, International Sportsman Exposition, Rocky Mountain Anglers Association, Utah Water Users Association, BYU's Aquatic Management class, Utah Lake Festival, Provo River Watershed Festival, Friends of Strawberry Valley, June Sucker Recovery Program, Uintah County Schools, 2009 Utah Nonpoint Source Water Quality Conference, NRCS earth day program, College of Eastern Utah biology classes, Nature High Summer Camp, school groups at Lake Powell and Provo Canyon Schools.
- Aquatic invasive species presentations were made to numerous natural resource management agencies across Utah.
- Multiple consultations about aquatic invasive species were provided to national organizations and for other states' Aquatic Invasive Species Programs—Utah Division of Wildlife Resources' aquatic invasive species program is recognized as one of the best in the United States.
- Multiple media releases occurred on the radio (20), television (15) and in local area or statewide newspapers (35). All of these media releases were promoted as news, and were without cost to UDWR. Regarding just the television news releases, they were viewed by over 2 million folks and had a publicity value of \$11,610.
- 13,354 different viewers assessed UDWR's mussel web page (www.wildlife.utah.gov/mussels), learning about aquatic invasive species issues and watercraft decontamination procedures.

- 2,988 hours (1.44 FTE) of volunteer time were worked under authority of UDWR's Volunteer Program, targeting watercraft interdiction, inspection for AIS and education contacts about quagga & zebra mussel issues.
- 299,151 boats were interdicted (includes 106,000 interdicted by the National Park Service at Lake Powell), problematic boats inspected and boat operators educated about quagga and zebra mussel issues.
- 97% of boaters surveyed by UDWR were aware of the quagga & zebra mussel issue.
Note: This does not necessarily mean that they understand and comply with the "Clean, Drain & Dry" expectation or the Decontamination Certification form. Although a survey of 171 boaters in the Southeastern Region at Electric Lake, which is a water affected by zebra mussels, showed that 70% claimed to meet the expectation and were compliant.

- **Decontaminations & Encrusted Boats**

- UDWR's five regional aquatic invasive species biologists as well as National Park Service and concessionaire personnel at Lake Powell are certified "Level II Water Craft Inspection & Decontamination Trainers." This is a certified program provided by the Pacific States Marine Fisheries Commission. So, multiple Watercraft Inspection & Decontamination Trainings were conducted across the Utah amongst UDWR, National Park Service, SP&R, other natural resource management agencies, Tribal, and marina or recreation area concessionaire personnel.
- 2,511 boats were decontaminated (includes 675 decontaminated by the National Park Service at Lake Powell) due to their being used on quagga or zebra mussel affected waters in North America during the previous 30 days.
- Scuba equipment for UDOT's bridge inspection contractor was inspected and decontaminated twice, since they had been underwater in quagga and zebra mussel affected waters in the mid west in the previous 30 days.
- Construction equipment for SP&R was routinely inspected and decontaminated, since they had been working in quagga mussel affected waters at Red Fleet Reservoir in the previous 30 days.
- Information regarding boater history of "Last Water Visited" and "Next Destination" were identified at selected waters to aid in risk assessment and redeployment of resources in the advent of a quagga or zebra mussel discovery.
- 15 boats were either reported by cooperators or discovered during routine inspections to be encrusted--one or more mussels--with quagga or zebra

mussels prior to their launch in Utah (includes 11 discovered by the National Park Service at Lake Powell). All were decontaminated, quarantined and eventually allowed to launch. Some resulted in enforcement investigation and action by either UDWR, the National Park Service at Lake Powell or another state.

- An encrusted boat, known as the “Hello” boat, was reported traveling through Utah by a concerned boater. It was eventually apprehended in Spokane WA through a coordinated West wide search launched by UDWR and coordinated by Idaho Department of Agriculture.

- **Presence/Absence of Quagga & Zebra Mussels**

- 50 selected water bodies had plankton samples taken in 2009 for inspection to determine the presence or absence of quagga or zebra mussel veligers, which are microscopic larvae. The specific water bodies and results can be viewed at www.wildlife.utah.gov/mussels (click on affected waters).
 - All were determined negative via microscopy using cross-polarized and bright light; thus not showing evidence of veligers.
 - In the case of Red Fleet Reservoir and Electric Lake, each were determined to evidence quagga mussel or zebra mussel veligers, respectively, in 2008. Those determinations were made via microscopy and confirmed by three different, independent molecular assessments--nuclear DNA, mitochondrial DNA and sequencing to compare the DNA with the international GEN database.
 - Plankton samples for 2009 at Red Fleet Reservoir and Electric Lake showed no evidence for quagga or zebra mussel DNA.

- **Law Enforcement**

- 4,171 contacts by law enforcement officers (3,884 by UDWR Conservation Officers & 287 by NPS Rangers at Lake Powell) specifically targeting compliance with aquatic invasive species regulations.
- Many verbal warnings were made by law enforcement officers for non-compliance with aquatic invasive species regulations.
 - Printable self certification warnings were developed by UDWR specific to vehicles parked at boat ramps without certification. UDWR Conservation Officers were able to place these warnings on vehicles, then track contacts with these individuals within a database for future compliance.
- 13 written warning citations issued by UDWR Conservation Officers for non-compliance with aquatic invasive species regulations.
- No “Notice to Appear” in court citations for aquatic invasive species regulations were issued by UDWR, however, the National Park Service at Lake Powell issued 201.

NORTHERN REGION SUMMARY

Prepared by Candace Hutchinson, AIS Biologist

- **Budget, Personnel & Equipment**
 - FY10 UDWR & Partner funds amounted to \$175,476 and supported operations for one AIS biologist and 8 technicians.
 - 560 hours of Law Enforcement were worked, amounting to \$17,108 in operation costs.
 - 8 Decontamination units were assigned to the region as follows:
 - 6 trailer-mounted units w/out reclaim systems; each cost \$13,400 and they were purchased by UDWR (project E1A520xxx) across the period of FY07-FY10—Bear Lake, East Canyon, Echo, Hyrum, Pineview (2), Rockport, Willard;
 - 1 trailer-mounted unit w/out reclaim system; cost was \$13,400 and it was purchased by USFS in FY09 and assigned to UDWR for use at Pineview Reservoir.
 - **Note:** This unit is included in the aforementioned list for Pineview.
 - 1 trailer-mounted unit w/out reclaim system; cost was \$13,400 and it was purchased with Weber Basin Water Conservancy District funds (project E4F740xxx) in FY10 for use at Rockport Reservoir.
 - **Note:** This unit is included in the aforementioned list for Rockport.
- **Outreach**
 - Public presentations at the Utah Boat Show, International Sportsman Expo and Utah Water Users Association, consisting of an informational booth and video presentation.
 - Several media releases occurred on the radio and television and in local area newspapers and news letters.
 - Over 120,000 watercraft were interdicted, inspected for AIS and educated about quagga & zebra mussel issues.
 - 1,325 hours (0.64 FTE) were worked under authority of UDWR's Volunteer Program, targeting watercraft interdiction, inspection for AIS & education about quagga & zebra mussel issues.
 - 1,875 boater surveys were conducted, showing that 95% of interviewees had heard of and were aware of the quagga & zebra mussel issue.
 - Note:** This does not mean that they heard and understood about the Decontamination Certification Form.
 - The AIS biologist is certified as a "Level II Water Craft Inspection Trainer." So, "Level I Watercraft Inspection Training" was conducted amongst UDWR, SP&R, natural resource management agencies, Tribal, and marina personnel.
- **Decontaminated & Encrusted Boats**
 - 13 boats were decontaminated due to them being used on a quagga or zebra mussel affected water in North America within the previous 30 days.

- No watercraft were found to be encrusted with quagga or zebra mussels.
- **Presence/Absence of Quagga & Zebra Mussels**
 - Plankton samples showed no evidence of veligers (microscopic larvae) for quagga or zebra mussels.
- **Law Enforcement (UDWR Conservation Officers enforced AIS regulations)**
 - 515 contacts
 - No “Notice to Appear” in court citations
 - 6 written warning citations—Generic AIS Rule Violation (1), Failure to Certify Decontamination (0) & Failure to Display Decontamination Certification (5).

NORTHERN REGION Water-By-Water Reports

Region Wide Operations

One Biologist I position funded for 12 months by UDWR (\$70,313 project E1A520xxx) managed the regional AIS program and supervised the Wildlife Technician II position along with a segment of the Wildlife Technician I positions.

One Wildlife Technician II position funded for 7 months by UDWR (\$28,407 project E1A520xxx) used to rove between regional waters as needed and to supervise a segment of the Wildlife Technician I positions.

- Assigned a \$13,400 decontamination unit (project E1A520xxx, purchased in FY07)

Bear Lake

1. Budget, Personnel & Equipment
 - a. UDWR \$12,500 (program E1A520xxx); 1 technician assigned mid May thru mid September (4 months).
 - b. One \$13,400 decontamination unit purchased with UDWR funds (program E1A520xxx purchased FY07).
2. Outreach
 - a. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR and Bear Lake Watch volunteers assisted.
 - b. Over 20,000 boats were interdicted, inspected and educated.
 - c. 97% of boaters are aware of invasive mussel issues.
 - d. Trained SP&R on Level I watercraft inspections.
3. Decontaminations & Encrusted Boats
 - a. Four boats were decontaminated; two were from Lake Mead and two were rented boats with an unknown use history.
 - b. No boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (357 interviews)
 - a. Last Water Visited
 1. Bear Lake = 246 (69%)
 2. Pineview = 63
 3. Willard Bay = 51
 4. Lake Powell = 44
 5. Jordanelle = 39
 6. Utah Lake = 38
 - b. Next Destination
 1. Bear Lake = 227 (64%)
 2. Pineview = 44
 3. Willard Bay = 39
 4. Lake Powell = 36
 5. Utah Lake = 21
 6. Jordanelle = 21

Note: 64% to 69% of Bear Lake boaters seem to frequently use Bear Lake.

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

East Canyon and Echo Reservoirs

1. Budget, Personnel & Equipment
 - a. UDWR \$12,500 (program E1A520xxx); 1 technician shared between East Canyon and Echo reservoirs was assigned mid May thru mid September (4 months).
 - i. The primary focus was placed at East Canyon Reservoir, since Echo resort staff partnered in overseeing interdiction, inspection & decontamination work at that location.
 - b. Two \$13,400 decontamination units purchased with UDWR funds and shared between East Canyon, Echo & Rockport Reservoirs (one purchased FY07 & one purchased Fall of FY10).
2. Outreach
 - a. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - b. Approximately 15,000 boats/watercrafts were interdicted, inspected and educated at East Canyon.
 - i. No count was taken at Echo Reservoir by resort staff.
 - c. 99% of boaters were aware of the invasive mussel issue; in fact, only three out of 313 interviews indicated an unawareness of the problem.
 - d. Trained SP&R on Level I watercraft inspections.

3. Decontaminations & Encrusted Boats
 - a. No boats needed to be decontaminated.
 - b. No boats were encrusted with quagga or zebra mussels.
 4. Boater History of Last Water Visited and Next Destination (313 interviews)

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| <ol style="list-style-type: none"> a. <u>Last Water Visited</u> <ol style="list-style-type: none"> 1. East Canyon = 199 (64%) 2. Willard Bay = 33 3. Pineview = 32 4. Jordanelle = 21 5. Lake Powell = 20 | <ol style="list-style-type: none"> b. <u>Next Destination</u> <ol style="list-style-type: none"> 1. East Canyon = 145 (46%) 2. Strawberry = 28 3. Pineview = 27 4. Flaming Gorge = 19 5. Willard = 17 6. Echo = 17 |
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- Note: 46% to 64% of East Canyon boaters seem to frequently use East Canyon.**
5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
 6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Hyrum Reservoir

1. Budget, Personnel & Equipment
 - a. UDWR \$12,500 (program E1A520xxx); 1 technician assigned mid May thru mid September (4 months).
 - i. Technician also occasionally covered Mantua and Newton Reservoir boat launches.
 - b. One \$13,400 decontamination unit purchased with UDWR funds (program E1A520xxx purchased FY07).
2. Outreach
 - c. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - b. Over 15,000 boats interdicted, inspected and educated.
 - c. 89% of boaters were aware of the invasive mussel issue; in fact, only 49 out of 452 interviews indicated an unawareness of the problem.
 - d. Trained SP&R on Level I watercraft inspections.
3. Decontaminations & Encrusted Boats

- a. One boat needed to be decontaminated; it was from Lake Mead.
 - b. No boats were encrusted with quagga or zebra mussels.
4. Boater History of Last Water Visited and Next Destination (452 interviews)
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| <p>a. <u>Last Water Visited</u></p> <ul style="list-style-type: none"> 1. Hyrum = 176 (39%) 2. Bear Lake = 66 3. Willard = 41 4. Newton = 41 5. Mantua = 27 6. Lake Powell = 27 | <p>b. <u>Next Destination</u></p> <ul style="list-style-type: none"> 1. Bear Lake = 150 2. Hyrum = 116 (26%) 3. Willard = 65 4. Lake Powell = 53 5. Newton = 38 |
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- Note: 26% to 39% of Hyrum boaters seem to frequently use Hyrum.**
5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
- a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Pineview Reservoir

- 1. Budget, Personnel & Equipment
 - a. UDWR \$9,744 (program E1A520xxx); 1 technician assigned mid May thru mid September (4 months).
 - b. USFS \$19,998 (program E4F470xxx); 2 technicians assigned June thru August (3 months each).
 - c. Two \$13,400 decontamination units:
 - i. One unit purchased with UDWR funds in FY08 (program E1A520xxx)
 - ii. One \$13,400 decontamination unit; purchased by USFS and transferred to UDWR in FY09.
- 2. Outreach
 - a. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - b. Approximately 35,000 boats were interdicted, inspected and educated.
 - c. 93% of boaters were aware of the invasive mussel issue; in fact, only 23 out of 330 interviews indicated an unawareness of the problem.
 - d. Trained SP&R on Level I watercraft inspections.

3. Decontaminations & Encrusted Boats
 - a. Seven boats needed to be decontaminated; six were from Lake Mead and one was from Lake Havasu.
 - b. No boats were encrusted with quagga or zebra mussels.
4. Boater History of Last Water Visited and Next Destination (330 interviews)

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| <ol style="list-style-type: none"> a. <u>Last Water Visited</u> 1. Pineview = 274 (83%) 2. Willard = 70 3. Lake Powell = 37 4. Bear Lake = 31 5. East Canyon = 25 6. Flaming Gorge = 24 | <ol style="list-style-type: none"> b. <u>Next Destination</u> 1. Pineview = 208 (63%) 2. Willard Bay = 50 3. Lake Powell = 42 4. Flaming Gorge = 30 5. Bear Lake = 28 |
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Note: 63% to 83% of Pineview boaters seem to frequently use Pineview.
5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Rockport Reservoir

1. Budget, Personnel & Equipment
 - a. Weber Basin WCD \$10,244 (program E4F740xxx); 1 technician assigned June thru August (3 months).
 - b. One \$13,400 decontamination unit--purchased with Weber Basin WCD funds in Fall of FY10 (program E4F740xxx).
4. Outreach
 - a. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - b. Approximately 15,000 boats were interdicted, inspected and educated.
 - c. 94% of boaters were aware of the invasive mussel issue; in fact, only 14 out of 228 interviews indicated an unawareness of the problem.
 - d. Trained SP&R on Level I watercraft inspections.
3. Decontaminations & Encrusted Boats
 - a. No boats required decontamination.

- b. No boats were encrusted with quagga or zebra mussels.
- 4. Boater History of Last Water Visited and Next Destination (228 interviews)
 - a. Last Water Visited
 - 1. Rockport = 107 (47%)
 - 2. Jordanelle = 41
 - 3. Willard Bay = 36
 - 4. Strawberry = 28
 - 5. Deer Creek = 23
 - b. Next Destination
 - 1. Rockport = 82 (36%)
 - 2. Strawberry = 23
 - 3. Jordanelle = 23
 - 4. Willard = 17
 - 5. Flaming Gorge = 16
- Note: 36% to 47% of Rockport boaters seem to frequently use Rockport.**
- 5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
- 6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Willard Bay Reservoir

- 1. Budget, Personnel & Equipment
 - a. UDWR \$9,947 (program E1A520xxx); 1 technician assigned June thru August (3 months).
 - b. One \$13,400 decontamination unit--purchased with UDWR funds in FY07 (program E1A520xxx).
- 2. Outreach
 - a. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - b. Over 20,000 boats were interdicted, inspected and educated.
 - c. 99% of boaters were aware of the invasive mussel issue; in fact, only 3 out of 195 interviews indicated an unawareness of the problem.
 - d. Trained SP&R on Level I watercraft inspections.
- 3. Decontaminations & Encrusted Boats
 - a. One boat needed to be decontaminated; no explanation by the technician provided.
 - b. No boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (195 interviews)
 - a. Last Water Visited
 1. Willard Bay = 136 (70%)
 2. Pineview = 39
 3. Lake Powell = 22
 4. Bear Lake = 20
 5. East Canyon = 19
 - b. Next Destination
 1. Willard Bay = 124 (64%)
 2. Pineview = 25
 3. East Canyon = 19
 4. Lake Powell = 17
 5. Bear Lake = 10

Note: 64% to 70% of Willard boaters seem to frequently use Willard.

5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

CENTRAL REGION SUMMARY

Prepared by Evan Freeman, AIS Biologist

- **Budget, Personnel & Equipment**
 - FY10 UDWR & Partner funds amounted to \$256,127 and supported operations for one AIS biologist and 13 technicians.
 - 1,126 hours of Law Enforcement were worked, amounting to \$33,593 in operation costs.
 - 7 Decontamination units were assigned to the region.
 - Each unit cost \$13,400; they were purchased across the period of FY07-09—Deer Creek, Jordanelle (2), Strawberry, Utah Lake (2), Yuba.
- **Outreach**
 - Public presentations at the Boat Show, International Sportsman Exposition, Utah Lake Festival, Provo River Watershed
 - Festival, Friends of Strawberry Valley, June Sucker Recovery Program, and Provo Canyon Schools.
 - Several media releases occurred on the radio and television and in local area newspapers and news letters.
 - Over 58,660 watercraft were interdicted, inspected for AIS and educated about quagga & zebra mussel issues.
 - 754 hours (0.36 FTE) were worked under authority of UDWR's Volunteer Program, targeting watercraft interdiction, inspection for AIS & education about quagga & zebra mussel issues.
 - 92% of the surveyed boaters had heard of and were aware of the quagga & zebra mussel issue.
 - The AIS biologist is certified as a "Level II Water Craft Inspection Trainer." So, "Level I Watercraft Inspection Training" was conducted amongst UDWR, SP&R, natural resource management agencies, and marina personnel.
- **Decontaminated & Encrusted Boats**
 - 154 boats were decontaminated.
 - Most were previously on Lake Powell and asked to have a voluntary professional decontamination.
 - 7 were decontaminated due to the boat being used on a quagga or zebra mussel affected water in North America within the previous 30 days.
 - Scuba equipment for UDOT's bridge inspection contractor was inspected and decontaminated twice, since they had been underwater in quagga and zebra mussel affected waters in the mid west in the previous 30 days.
 - Two watercraft were found to be encrusted with quagga mussels; both from Lake Mead.
 - In one instance the mussels were alive.
 - In the other instance the mussels were desiccated.
- **Presence/Absence of Quagga & Zebra Mussels**
 - Plankton samples showed no evidence of veligers (microscopic larvae) for quagga or zebra mussels.

- **Law Enforcement (UDWR Conservation Officers enforced AIS regulations)**
 - 631 contacts
 - Two potential “Notice to Appear” in court citations are currently being investigated; they will be recommended to the Salt Lake County Attorney for prosecution as Unlawful Possession and Transport of Quagga Mussels.
 - No warning citations issued.

CENTRAL REGION Water-By-Water Reports

Region Wide Operations

One Biologist I position funded for 12 months by UDWR (\$71,567 project E1A520xxx) managed the regional AIS program and supervised the Wildlife Technician II position along with a segment of the Wildlife Technician I positions.

One Wildlife Technician II position funded for 7 months by UDWR (\$28,407 project E1A520xxx) used to rove between regional waters as needed and to supervise a segment of the Wildlife Technician I positions.

- Assigned a \$13,400 decontamination unit (project E1A520xxx, purchased in FY07)

Deer Creek Reservoir

1. Budget, Personnel & Equipment

- a. UDWR \$16,693 (program E1A520xxx); 1 technician assigned May thru September (5 months).
- b. CUWCD \$20,000 (program E4X541000); 2 technicians assigned June thru August (3 months each).
- c. One \$13,400 decontamination unit purchased with UDWR funds in FY07 (program E1A520xxx).

2. Outreach

- a. Several media releases occurred on the radio and television and in local area newspapers.
- b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
- c. Over 10,500 boats were interdicted, inspected and educated.
- d. 98% of the interviewed boaters were aware of invasive mussel issues.
- e. Trained UDWR and SP&R personnel on Level I watercraft inspections.

3. Decontaminations & Encrusted Boats

- a. Six boats were decontaminated; one was from Lake Mead, requiring a professional decontamination; and five were from Lake Powell, who requested voluntary decontaminations.

- b. No boats were encrusted with quagga or zebra mussels.
- 4. Boater History of Last Water Visited and Next Destination (240 interviews)
 - a. Last Water Visited
 - 1. Deer Creek = 59 (25%)
 - 2. Utah Lake = 39
 - 3. Strawberry = 23
 - 4. Jordanelle = 18
 - 5. Flaming Gorge = 7
 - b. Next Destination
 - 1. Deer Creek = 57 (24%)
 - 2. Lake Powell = 25
 - 3. Strawberry = 23
 - 4. Jordanelle = 16
 - 5. Utah Lake = 11
- Note: 24% to 25% of Deer Creek boaters seem to frequently use Deer Creek.**
- 5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
- 6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Jordanelle Reservoir

- 1. Budget, Personnel & Equipment
 - a. UDWR \$16,490 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. CUWCD \$20,000 (program E4X541000); 2 technicians assigned June thru August (3 months each).
 - c. One \$13,400 decontamination unit purchased with UDWR funds in FY07 (program E1A520xxx).
- 2. Outreach
 - a. Several media releases occurred on the radio and television and in local area newspapers.
 - b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - c. Over 8,600 boats were interdicted, inspected and educated.
 - d. 94% of the interviewed boaters were aware of invasive mussel issues.
 - e. Trained UDWR and SP&R personnel on Level I watercraft inspections.
- 3. Decontaminations & Encrusted Boats
 - a. 53 boats were decontaminated; 5 required the decontamination and 48 requested a voluntary decontamination.

- b. No boats were encrusted with quagga or zebra mussels.
- 4. Boater History of Last Water Visited and Next Destination (411 interviews)
 - a. Last Water Visited
 - 1. Jordanelle = 181 (44%)
 - 2. Utah Lake = 30
 - 3. Lake Powell = 29
 - 4. Deer Creek = 18
 - 5. Bear Lake = 14
 - b. Next Destination
 - 1. Jordanelle = 52 (12%)
 - 2. Deer Creek = 10
 - 3. Bear Lake = 10
 - 4. Lake Powell = 9
 - 5. Strawberry = 7
- Note: 12% to 44% of Jordanelle boaters seem to frequently use Jordanelle.**
- 5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
- 6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Strawberry Reservoir

- 1. Budget, Personnel & Equipment
 - a. UDWR \$16,490 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. CUWCD \$20,000 (program E4X541000); 2 technicians assigned June thru August (3 months each).
 - d. Two \$13,400 decontamination units purchased with UDWR funds in FY07 and FY08 (program E1A520xxx).
- 2. Outreach
 - a. Several media releases occurred on the radio and television and in local area newspapers.
 - b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - ii. UDWR volunteers assisted.
 - c. Over 12,800 boats were interdicted, inspected and educated.
 - d. 99% of the interviewed boaters were aware of invasive mussel issues.
 - e. Trained UDWR and marina personnel on Level I watercraft inspections.
- 3. Decontaminations & Encrusted Boats
 - a. No boats needed to be decontaminated.
 - b. No boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (157 interviews)
- | | |
|------------------------------|----------------------------|
| a. <u>Last Water Visited</u> | b. <u>Next Destination</u> |
| 1. Strawberry = 45 (28%) | 1. Strawberry = 71 (45%) |
| 2. Jordanelle = 14 | 2. Flaming Gorge = 13 |
| 3. Deer Creek = 12 | 3. Jordanelle = 12 |
| 4. Utah Lake = 9 | 4. Deer Creek = 9 |
| 5. Flaming Gorge = 7 | 5. Utah Lake = 7 |

Note: 28% to 45% of Strawberry boaters seem to frequently use Strawberry.

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
- a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Utah Lake

1. Budget, Personnel & Equipment
- a. UDWR \$16,990 (program E1A520xxx); 1 technician assigned May thru September (5 months).
- b. CUWCD \$12,500 (program E4X541000); 1 technician assigned June thru September (4 months).
- c. One \$13,400 decontamination unit purchased with UDWR funds in FY07 (program E1A520xxx).
2. Outreach
- a. Several media releases occurred on the radio and television and in local area newspapers.
- b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
- iii. UDWR volunteers assisted.
- c. Over 16,960 boats were interdicted, inspected and educated.
- d. 74% of the interviewed boaters were aware of invasive mussel issues.
- e. Trained UDWR, SP&R and marina personnel on Level I watercraft inspections.
3. Decontaminations & Encrusted Boats
- a. 90 boats were decontaminated; most were from Lake Powell and requested

- a voluntary professional decontamination.
 - b. One boat was encrusted with quagga mussels; it was from Lake Mead and the Utah Lake SP&R Manager directed the owner to contact UDWR for a decontamination.
4. Boater History of Last Water Visited and Next Destination (401 interviews)
- | | |
|---|---|
| <ul style="list-style-type: none"> a. <u>Last Water Visited</u> 1. Utah Lake = 301 (75%) 2. Lake Powell = 27 3. Deer Creek = 14 4. Yuba = 9 5. Jordanelle = 9 | <ul style="list-style-type: none"> b. <u>Next Destination</u> 1. Utah Lake = 303 (75%) 2. Lake Powell = 32 3. Yuba = 10 4. Deer Creek = 8 5. Jordanelle = 8 |
|---|---|

Note: 75% of Utah Lake boaters seem to frequently use Utah Lake.

- 5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
- 6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Yuba Reservoir

- 1. Budget, Personnel & Equipment
 - a. UDWR \$16,990 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. One \$13,400 decontamination unit purchased with UDWR funds in FY07 (program E1A520xxx).
- 2. Outreach
 - a. Several media releases occurred on the radio and television and in local area newspapers.
 - b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - c. Over 9,800 boats were interdicted, inspected and educated.
 - d. 97% of the interviewed boaters were aware of invasive mussel issues.
 - e. Trained UDWR and SP&R personnel on Level I watercraft inspections.
- 3. Decontaminations & Encrusted Boats
 - a. Four boats were decontaminated; 2 were rentals with an unknown use

history, and 2 were from Lake Powell, requesting voluntary professional decontaminations.

b. No boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (403 interviews)

a. Last Water Visited

1. Yuba = 150 (37%)
2. Utah Lake = 47
3. Lake Powell = 34
4. Jordanelle = 26
5. Deer Creek = 21

b. Next Destination

1. Yuba = 159 (39%)
2. Utah Lake = 46
3. Lake Powell = 35
4. Strawberry = 24
5. Jordanelle = 23

Note: 37% to 39% of Yuba boaters seem to frequently use Yuba.

5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples

- a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.

6. Law Enforcement Efforts

- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

SOUTHERN REGION SUMMARY

Prepared by Crystal Stock, AIS Biologist

- **Budget, Personnel & Equipment**

- FY10 UDWR & Partner funds amounted to \$244,309 and supported operations for one AIS biologist and 9 technicians.
- 1,233 hours of Law Enforcement were worked, amounting to \$40,597 in operation costs.
- 7 Decontamination units were assigned to the region as follows:
 - 6 trailer-mounted units w/out reclaim systems; each cost \$13,400 and they were purchased by UDWR (project E1A520xxx) across the period of FY07-FY09—Fish Lake, Gunlock, Otter Creek, Panguitch, roving unit (Kolob, Minersville, Pine Valley, Piute, Sand Cove), Sand Hollow, Quail Creek.
 - 1 trailer-mounted unit w/out reclaim system; cost was \$13,400 and it was purchased by USFS in FY09 and assigned to UDWR for use at Panguitch Lake.
 - **Note:** This unit is included in the aforementioned list for Panguitch.

- **Outreach**

- Public presentations at Utah Boat Show, International Sportsman Expo and Utah Water Users Association.
- Several media releases occurred on the radio and television and in local area newspapers.
- 108,662 watercraft were interdicted (includes 106,000 interdicted by the National Park Service at Lake Powell), inspected for AIS and educated about quagga & zebra mussel issues.
 - 72 hours (0.03 FTE) of volunteer effort were worked under authority of UDWR's Volunteer Program, targeting watercraft interdiction, inspection for AIS & education about quagga & zebra mussel issues.
 - 2,549 boater surveys were conducted, showing that 99% of interviewees had heard of and were aware of the quagga & zebra mussel issue.

Note: This does not mean that they heard and understood about the Decontamination Certification Form.
 - The AIS biologist is certified as a "Level II Water Craft Inspection Trainer." So, "Level I Watercraft Inspection Training" was conducted amongst UDWR, SP&R, natural resource management agencies, Tribal, and marina personnel.

- **Decontaminated & Encrusted Boats**

- 683 boats were decontaminated (includes 675 decontaminated by the National Park Service at Lake Powell) due to them being used on a quagga or zebra mussel affected water in North America within the previous 30 days.

- 10 watercraft (includes 10 discovered by the National Park Service at Lake Powell) were found to be encrusted with quagga or zebra mussels.
- **Presence/Absence of Quagga & Zebra Mussels**
 - Plankton samples showed no evidence of veligers (microscopic larvae) for quagga or zebra mussels.
- **Law Enforcement (UDWR Conservation Officers enforced AIS regulations)**
 - 829 contacts
 - No “Notice to Appear” in court citations
 - 3 written warning citations—Generic AIS Rule Violation (0), Failure to Certify Decontamination (2) & Failure to Display Decontamination Certification (1).

SOUTHERN REGION Water-By-Water Reports

Region Wide Operations

One Biologist I position funded for 12 months by UDWR (\$71,567 project E1A520xxx) managed the regional AIS program and supervised the Wildlife Technician II position along with a segment of the Wildlife Technician I positions.

One Wildlife Technician II position funded for 7 months by UDWR (\$28,407 project E1A520xxx) used to rove between regional waters as needed and to supervise a segment of the Wildlife Technician I positions.

- Assigned a \$13,400 decontamination unit (project E1A520xxx, purchased in FY07)

Fish Lake

1. Budget, Personnel & Equipment
 - a. UDWR \$16,490 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. One \$13,400 decontamination unit purchased with UDWR funds in FY08 (program E1A520xxx).
2. Outreach
 - a. Several media releases occurred on the radio and television and in local area newspapers.
 - b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - c. Over 509 boats were interdicted, inspected and educated.
 - ii. Most (95%) were from Utah, but 4% were from Nevada; the remainder were from California (1%), Arizona (1%), Colorado (1%) and Montana (1%).
 - d. 99.9% of boaters were aware of invasive mussel issues.
3. Decontaminations & Encrusted Boats

- a. One boat was decontaminated; it was from Lake Mead.
- 4. Boater History of Last Water Visited and Next Destination (509 interviews)
 - a. Last Water Visited
 - 1. Sand Hollow = 341 (67%)
 - 2. Quail Creek = 56
 - 3. Lake Powell = 36
 - 4. Utah Lake = 20
 - 5. New Boat Owners = 10
 - b. Next Destination
 - 1. No Data Collected
 - 2. No Data Collected
 - 3. No Data Collected
 - 4. No Data Collected
 - 5. No Data Collected

Note: None of Fish Lake boaters seem to frequently use Fish Lake. And, Lake Mead (NV), Rockport, Gunlock, Minersville and Jordanelle each represent 2% or less of the “Last Water Visited” for boaters at Fish Lake.

- 5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation’s microscopy lab in Denver, CO; all were found to be negative.
- 6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No “Notice to Appear” in court citations were issued.

Gunlock Reservoir

The reservoir was drained in 2008, and had very little water in 2009. Thus, boater use was extremely low, resulting in no technician nor a decontamination unit being assigned during the 2009 boating season. Periodic inspection by the AIS biologist and the roving Wildlife Technician II occurred. Budget was redistributed amongst Sand Hollow and Quail Creek, allowing additional hours of coverage per day.

Routine operations are expected to begin again in 2010 if water levels rise and boater use increases.

Kolob Reservoir

- 1. Budget, Personnel & Equipment
 - a. No specific funding or equipment allocation was provided, but the region AIS biologist and the roving Wildlife Technician II occasionally visited, making AIS boater contacts.
- 2. Outreach
 - a. No media releases occurred on the radio and television and in local area newspapers.
 - b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.

- c. 68 boats were interdicted, inspected and educated.
 - i. Most (72%) were from Utah, and most of those were local folks from Washington County; but 24% were from Nevada; the remainder were from California (4%).
 - d. Although a formal survey of how many of the boaters were aware of invasive mussel issues was not taken, most were obviously aware based upon the condition of their boats and their attitudes.
 - 3. Decontaminations & Encrusted Boats
 - a. No boats were decontaminated.
 - 4. Boater History of Last Water Visited and Next Destination (68 interviews)
 - a. Last Water Visited
 - 1. Sand Hollow = 24 (35%)
 - 2. Kolob = 19 (28%)
 - 3. Panguitch = 10
 - 4. Quail Creek = 4
 - 5. Newcastle = 2
 - b. Next Destination
 - 1. No Data Collected
 - 2. No Data Collected
 - 3. No Data Collected
 - 4. No Data Collected
 - 5. No Data Collected
- Note: 28% of Kolob boaters seem to frequently use Kolob. And, Lower Bound and Eagle Valley each represented 3% of “Last Water Visited;” while Otter Creek, Navajo, Forsyth and Deer Creek each represented 2% or less of the “Last Water Visited.”**
- 5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - c. No plankton samples were taken from this water.
 - 6. Law Enforcement Efforts
 - d. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No “Notice to Appear” in court citations were issued.

Lake Powell (Glen Canyon National Recreation Area)

- 1. Budget, Personnel & Equipment
 - a. UDWR \$22,000 (program E1A520xxx); grant for NPS at Glen Canyon National Recreation Area to conduct a program to combat quagga and zebra mussels on Lake Powell.
 - b. National Park Service expended \$500,000 in FY09 for personnel and operational funds to support a robust program to combat quagga and zebra mussels on Lake Powell at Glen Canyon National Recreation Area.
 - c. Five decontamination units were purchased by NPS between FY07 and FY10. Two semi-permanent units with reclaim systems costing approximately \$450,000 combined are located at Wahweap and Bullfrog. Three trailer-mounted units with reclaim systems costing approximately \$22,000 each are located at Antelope Point, Hall’s Crossing and Hite.

2. Outreach

- a. Several media releases, primarily in Utah and Arizona occurred on the radio and television and in local area newspapers.
- b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR personnel assisted during routine angler contacts.
 - ii. Arizona Game and Fish personnel also assisted, including a technician who resided at Wahweap, working everyday interdicting boaters.
- c. Several other promotional items (e.g. whistles, key chains, etc.) using the slogan “Don’t Move a Mussel” were provided to boaters, too.
- d. NPS personnel participated in the Boat Show in Denver, Phoenix and Salt Lake City explaining the risk from quagga and zebra mussels to boaters.
- e. NPS personnel hosted four school programs, explaining the risk from quagga and zebra mussels to children, who are the “next generation” of boaters.
- f. Over 106,000 different boats were interdicted, inspected and educated by NPS at Glen Canyon National Recreation Area entrance points. Many of those boats were interdicted multiple times.
 - i. All boats launching on Lake Powell, other than the few boats using remote access points (e.g. Blue Notch, Red Canyon, White Canyon, etc.), are screened by NPS personnel at entrance points. Thus, Decontamination Certification forms are not used, except at the remote sites.

3. Decontaminations & Encrusted Boats

- a. The NPS’ Aquatic Invasive Species Coordinator and a concessionaire (Aramark) are WIT II certified; they conducted four level I trainings for boat inspection and decontamination involving 41 NPS, concessionaire and other partner personnel.
- b. More than 4,500 boats were selected for detailed inspection based upon their history of use in the last 30 days on quagga or zebra mussel affected waters as reported to NPS rangers.
- c. Approximately 15% of the inspected boats (675) were decontaminated.
- d. 11 boats were encrusted with quagga or zebra mussels. Most originated from areas affected by flows and quagga mussel from the lower Colorado River drainage: Lake Pleasant AZ (4), Lake Mead NV/AZ (4), Lake Havasu AZ/CA (1), Bullhead City AZ (1). One with zebra mussel came from Conneaut Lake PA. All were decontaminated and quarantined for a number of days to ensure kill of the mussels via desiccation.
- e. NPS also interdicted a boat with live Eurasian watermilfoil (invasive plant species) and a boat with live green mussels (marine invasive species); both were decontaminated.

4. Boater History of Last Water Visited and Next Destination (2008 UDWR Boater Survey)

Southern Lake Powell Boaters (6,863 interviews): The following portrays pre-arrival and post departure use patterns by boaters who launched from the Wahweap, Antelope Point & Stateline ramps of Lake Powell between March 1 and July 31, 2008.

- | a. <u>Last Water Visited</u> | b. <u>Next Destination</u> |
|--|----------------------------|
| 1. Lake Pleasant AZ (quagga infested) | 1. Sand Hollow UT |
| 2. Utah Lake UT | 2. Utah Lake UT |
| 3. Lake Mead NV/AZ (quagga infested) | 3. Pineview UT |
| 4. Sand Hollow UT | 4. Jordanelle UT |
| 5. Roosevelt Lake AZ | 5. Canyon Lake AZ |
| 6. Jordanelle UT | 6. Flaming Gorge UT/WY |
| 7. Saguaro Lake AZ | 7. Bear Lake UT/ID |
| 8. Canyon Lake AZ | 8. Roosevelt Lake AZ |
| 9. Lake Havasu AZ/CA (quagga infested) | 9. Quail Creek UT |
| 10. Bartlett Lake AZ | 10. Yuba UT |

Note: 3 of the top 10 waters used by southern Lake Powell boaters before arriving at Lake Powell are affected with quagga mussels.

Northern Lake Powell Boaters (N = 991): , The following portrays pre-arrival and post departure use patterns by boaters who launched from the Bullfrog, Hall's Crossing & Hite ramps of Lake Powell between March 1 and July 31, 2008.

- | a. <u>Last Water Visited</u> | b. <u>Next Destination</u> |
|------------------------------|----------------------------|
| 1. Utah Lake UT | 1. Utah Lake UT |
| 2. Blue Mesa CO | 2. Flaming Gorge UT /WY |
| 3. Highland State Park CO | 3. Blue Mesa CO |
| 4. Flaming Gorge UT /WY | 4. Highland State Park CO |
| 5. Strawberry UT | 5. Strawberry UT |
| 6. Rifle Gap CO | 6. Rifle Gap Reservoir CO |
| 7. Bear Lake UT/ID | 7. Chatfield CO |
| 8. Chatfield CO | 8. Scofield UT |
| 9. Scofield UT | 9. McPhee CO |
| 10. McPhee CO | 10. Deer Creek UT |

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were collected lake-wide. Some were sent to the Bureau of Reclamation's microscopy lab in Denver, CO; others continue to be examined by the NPS microscopy lab at Wahweap. Of those examined, all were found to be negative.
 - b. NPS has added a \$65,000 FlowCAM to their microscopy lab, which will greatly increase efficiency for analysis of plankton samples.
6. Law Enforcement Efforts

- a. NPS Rangers issued 201 citations during the 2009 boating season; most were for expired or lack of a Lake Powell launch certificate, but several were for failure to be inspected as directed. Most violations resulted in \$75 fines, but some of the flagrant violations have resulted in \$2,500 fines.
- b. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. No verbal or written warnings were given to boaters that were non-compliant with the self certification process. No “Notice to Appear” in court citations were issued.

Otter Creek Reservoir & Piute Reservoir

1. Budget, Personnel & Equipment
 - a. UDWR \$16,990 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. One \$13,400 decontamination unit purchased with UDWR funds in FY07 (program E1A520xxx).
2. Outreach
 - a. Several media releases occurred on the radio and television and in local area newspapers.
 - b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - c. Over 400 boats were interdicted, inspected and educated.
 - ii. Most (82%) were from Utah, but 12% were from Nevada; the remainder were from California (2%), Arizona (2%) and Montana (1%).
 - d. 99.9% of boaters were aware of invasive mussel issues; in fact, only two of 400 interviewees indicated they were unaware of the issue.
 - i. This reflects a substantial increase in awareness, since 2008 data showed only 66% of boaters were aware.
 - ii. Most (93%) boats had been used within the previous 30 days.
 - iii. **Note:** surveys were only conducted at Otter Creek Reservoir.
3. Decontaminations & Encrusted Boats
 - a. Three boats were decontaminated; all were from Lake Mead; a fourth boat from Lake Mead was already properly decontaminated upon arrival.
 - b. No boats were encrusted with quagga or zebra mussels.
4. Boater History of Last Water Visited and Next Destination (400 interviews)

| | |
|---|---|
| <ol style="list-style-type: none"> a. <u>Last Water Visited</u> <ol style="list-style-type: none"> 1. Otter Creek = 216 (54%) 2. Piute = 32 3. Panguitch = 20 4. Fish Lake = 16 | <ol style="list-style-type: none"> 5. Quail Creek = 12 b. <u>Next Destination</u> <ol style="list-style-type: none"> 1. No Data Collected 2. No Data Collected 3. No Data Collected |
|---|---|

4. No Data Collected

5. No Data Collected

Note: 54% of Otter Creek boaters seem to frequently use Otter Creek. And, Strawberry, Lake Powell, Sand Hollow, Lake Mead (NV), and Utah Lake each represent 2% or less of the “Last Water Visited” for boaters at Otter Creek.

5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation’s microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
 - b. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No “Notice to Appear” in court citations were issued.

Panguitch Lake

1. Budget, Personnel & Equipment
 - a. UDWR \$16,693 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. USFS \$19,998 (program E4F480xxx); 2 technicians assigned June thru August (3 months each).
 - c. One \$13,400 decontamination unit; purchased by USFS and transferred to UDWR in FY09.
2. Outreach
 - a. Several media releases occurred on the radio and television and in local area newspapers.
 - b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - c. 497 boats were interdicted, inspected and educated.
 - ii. Most (52%) were from Utah, but 48% were from Nevada and California, both infested with quagga and zebra mussels.
 - d. 99.7% of boaters were aware of invasive mussel issues.
3. Decontaminations & Encrusted Boats
 - a. No boats were decontaminated.
 - b. No boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (497 interviews)
 - a. Last Water Visited
 1. Panguitch = 204 (41%)
 2. Otter Creek = 65
 3. Sand Hollow = 55
 4. Quail Creek = 55
 5. Lake Mead = 15
 - b. Next Destination
 1. No Data Collected
 2. No Data Collected
 3. No Data Collected
 4. No Data Collected
 5. No Data Collected

Note: 41% of Panguitch Lake boaters seem to frequently use Panguitch Lake. It is notable that 3% (15) of Panguitch Lake boaters originated from Lake Mead, which is infested with quagga mussels—all were non-residents.

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
 - b. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Quail Creek

1. Budget, Personnel & Equipment
 - a. UDWR \$16,490 (program E1A520xxx); 1 technician assigned March thru October (8 months).
 - b. One \$13,400 decontamination unit purchased with UDWR funds in FY07 (program E1A520xxx).
2. Outreach
 - a. Several media releases occurred on the radio and television and in local area newspapers.
 - b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - c. Over 278 boats were interdicted, inspected and educated.
 - i. Most (94%) were from Utah, but 4% were from Nevada; the remainder were from Idaho (1%) and Arizona (1%).
 - ii. 69% of their boats had been used within the last 30 days.
 - d. 99.9% of boaters were aware of invasive mussel issues.
3. Decontaminations & Encrusted Boats
 - a. Two boats were decontaminated; both were from Lake Mead.
 - e. No boats encrusted with quagga or zebra mussels were discovered.

4. Boater History of Last Water Visited and Next Destination (278 interviews)

a. Last Water Visited

1. Quail Creek = 150 (54%)
2. Lake Powell = 14
3. Gunlock = 8

b. Next Destination

1. No Data Collected
2. No Data Collected
3. No Data Collected

Note: 54% of Quail Lake boaters seem to frequently use Quail Creek. And, Utah Lake, Otter Creek Minersville, Deer Creek, Lake Mead (NV) and Idaho waters each represent 1% or less of the “Last Water Visited “ for boaters at Quail Creek.

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples

- a. Plankton samples were all sent to the Bureau of Reclamation’s microscopy lab in Denver, CO; all were found to be negative.

6. Law Enforcement Efforts

- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self-certification process. No “Notice to Appear” in court citations were issued.

Sand Hollow Reservoir

1. Budget, Personnel & Equipment

- a. UDWR \$16,490 (program E1A520xxx); 1 technician assigned March thru October (8 months).
- b. One \$13,400 decontamination unit purchased with UDWR funds in FY08 (program E1A520xxx).

2. Outreach

- a. Several media releases occurred on the radio and television and in local area newspapers.
- b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
- c. 1,362 boats were interdicted, inspected and educated.
 - i. Most (95%) were from Utah, but 4% were from Nevada; the remainder were from California (1%), Arizona (1%), Colorado (1%) and Montana (1%).
 - ii. 50% of their boats had been used within the last 30 days.
- d. 99.9% of boaters were aware of invasive mussel issues.

3. Decontaminations & Encrusted Boats

- a. Two boats were decontaminated; both were from Lake Mead.
- f. No boats encrusted with quagga or zebra mussels were discovered.

4. Boater History of Last Water Visited and Next Destination (1,362 interviews)

a. Last Water Visited

1. Sand Hollow = 913 (67%)
2. Quail Creek = 150
3. Lake Powell = 95
4. Utah Lake = 54
5. New Boat Owners = 27
6. Lake Mead = 27

b. Next Destination

1. No Data Collected
2. No Data Collected
3. No Data Collected
4. No Data Collected
5. No Data Collected
6. No Data Collected

Note: 67% of Sand Hollow boaters seem to frequently use Sand Hollow. And, Rockport, Gunlock, Minersville and Jordanelle each represent 1% or less of the “Last Water Visited” for boaters at Sand Hollow.

5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples

- a. Plankton samples were all sent to the Bureau of Reclamation’s microscopy lab in Denver, CO; all were found to be negative.

6. Law Enforcement Efforts

- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Written warnings were given to boaters that were non-compliant with the self-certification process. No “Notice to Appear” in court citations were issued.

NORTHEASTERN REGION SUMMARY

Prepared by Natalie Muth Boren, AIS Biologist

- **Budget, Personnel & Equipment**

- FY10 UDWR & Partner funds amounted to \$254,652 and supported operations for one AIS biologist and 14 technicians.
- 286 hours of Law Enforcement were worked, amounting to \$9,708 in operation costs.
- 7 Decontamination units were assigned to the region as follows:
 - 4 trailer-mounted units w/out reclaim systems; each cost \$13,400 and they were purchased by UDWR (project E1A520xxx) across the period of FY07-FY09—Flaming Gorge (3), Pelican, Red Fleet, Starvation, Steinaker.
 - 1 trailer-mounted units w/out reclaim systems; cost was \$13,400 and it was purchased by USFS in FY09 and assigned to UDWR for use at Flaming Gorge.
 - **Note:** This unit is included in the aforementioned list for Flaming Gorge.
 - 1 semi-permanent unit with reclaim system for Red Fleet Reservoir; cost was \$65,913 and it was purchased with NRCS funds (project E4F990xxx) in FY10.
 - **Note:** This unit is included in the aforementioned list for Red Fleet.

- **Outreach**

- Public presentations at the Utah Boat Show, International Sportsman Expo, Western Park facility, Uintah High School, Chamber of Commerce, and the local BLM office.
- Several media releases occurred on the radio and television and in local area newspapers.
- Over 7,345 watercraft were interdicted, inspected for AIS and educated about quagga & zebra mussel issues. These watercraft originated from 22 states, including Utah, Nevada, New York, Tennessee, Arizona, California, Nebraska, Wisconsin, Kansas, Montana, Idaho, Colorado, Oregon, Texas, Washington and other western states.
 - 16 hours (0.008 FTE) were worked under authority of UDWR's Volunteer Program, targeting watercraft interdiction, inspection for AIS & education about quagga & zebra mussel issues.
 - 7,345 boater surveys were conducted, showing that 98% of interviewees had heard of and were aware of the quagga & zebra mussel issue.
Note: This does not mean that they heard and understood about the Decontamination Certification Form.
 - The AIS biologist is certified as a "Level II Water Craft Inspection Trainer." So, "Level I Watercraft Inspection Training" was conducted amongst UDWR, SP&R, natural resource management agencies, Tribal, and marina personnel.

- **Decontaminated & Encrusted Boats**
 - 1,348 boats were decontaminated due to their being used on a quagga or zebra mussel affected water in North America within the previous 30 days.
 - In four cases due to outreach success boat owners with a new-to-them, but used boat, typically with an unknown use history, requested a voluntary professional decontamination.
 - One watercraft at Buckboard Marina in Wyoming on Flaming Gorge was found to be encrusted with live zebra mussels from Lake of the Ozarks in Missouri. The owner, who had bought the boat and had it shipped, requested an inspection and decontamination by the marina, who contacted UDWR prior to the boat being launched. Thus, no law enforcement action by the U.S. Forest Service or Wyoming Game and Fish resulted (UDWR has no authority in Wyoming.).
- **Presence/Absence of Quagga & Zebra Mussels**
 - Plankton samples showed no evidence of veligers (microscopic larvae) for quagga or zebra mussels.
 - Negative microscopy & negative PCR also occurred at Red Fleet, which had shown positive for both microscopy & PCR during 2008.
- **Law Enforcement (UDWR Conservation Officers enforced AIS regulations)**
 - 1,325 contacts
 - No “Notice to Appear” in court citations
 - 2 written warning citations (none reported in fatpot)—Generic AIS Rule Violation (2), Failure to Certify Decontamination (0) & Failure to Display Decontamination Certification (0).

NORTHEASTERN REGION Water-By-Water Reports

Region Wide Operations

One Biologist I position funded for 12 months by UDWR (\$71,567 project E1A520xxx) managed the regional AIS program and supervised the Wildlife Technician II position along with a segment of the Wildlife Technician I positions.

One Wildlife Technician II position funded for 7 months by UDWR (\$28,407 project E1A520xxx) used to rove between regional waters as needed and to supervise a segment of the Wildlife Technician I positions.

- Assigned a \$13,400 decontamination unit (project E1A520xxx, purchased in FY07)

Flaming Gorge Reservoir

1. Budget, Personnel & Equipment

- a. UDWR \$33,481 (program E1A520xxx); 2 technicians assigned May thru September (5 months each).
- b. USFS \$ 19,998 (program E4F490xxx); 2 technicians assigned June thru August (3 months each).

- c. One \$13,400 decontamination unit purchased with UDWR funds in FY08 (program E1A520xxx).
- d. Three \$13,400 decontamination units;
 - i. Two units purchased with UDWR funds (program E1A520xxx) in FY07 & FY08—assigned at Dutch John and Lucerne Marina;
 - ii. One unit purchased by USFS with their funds in FY09 and temporarily assigned at Buckboard (WY) to UDWR for use at Flaming Gorge.

Note: This unit will be used at Flaming Gorge, but in Utah, once Wyoming becomes operational at Flaming Gorge.

2. Outreach

- a. Three media releases occurred on the radio and television and in local area newspapers—all specific to the zebra mussels found on a boat at Buckboard Marina in Wyoming.
- b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
- c. 3,526 boats were interdicted, inspected and educated.
- d. 99 % of boaters were aware of invasive mussel issues; in fact only 30 of the 3,526 interviewed boaters were unaware of the quagga and zebra mussel issue.

3. Decontaminations & Encrusted Boats

- a. 22 boats were decontaminated; all had been used outside of Utah on a quagga or zebra mussel affected water.
 - i. One boat (40 foot cabin cruiser) was encrusted with live zebra mussels and was interdicted prior to launch;
 - ii. It originated from Lake of the Ozarks in Missouri.

4. Boater History of Last Water Visited and Next Destination (3,526 interviews)

- | | |
|--|---|
| <ul style="list-style-type: none"> a. <u>Last Water Visited</u> 1. Flaming Gorge = 1,273 (36%) 2. Pineview = 102 3. Lake Powell = 95 4. Willard Bay = 89 5. Utah Lake = 81 | <ul style="list-style-type: none"> b. <u>Next Destination</u> 1. Flaming Gorge 1,510 (43%) 2. Lake Powell = 45 3. Utah Lake = 42 4. Willard Bay = 40 5. Pineview = 28 |
|--|---|

Note: 36% to 43% of Flaming Gorge boaters seem to frequently use Flaming Gorge. And, 5% of Flaming Gorge boaters first launch of the year was at Flaming Gorge.

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples

- a. Plankton samples were all sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
- 6. Law Enforcement Efforts
 - b. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. On the Memorial Day weekend 1,010 boats were interdicted at a roadblock in Manila. Verbal and written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Pelican Lake

- 1. Budget, Personnel & Equipment
 - a. UDWR \$16,480 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. BLM \$ 10,000 (program E4G310xxx); 1 technician assigned June thru August (3 months) to extend daily hours of coverage.
Note: Program implementation delayed until 2010, since contract approval was not achieved until mid September 2009.
 - c. One \$13,400 decontamination unit purchased with UDWR funds in FY08 (program E1A520xxx).
- 2. Outreach
 - a. No media releases occurred on the radio and television and in local area newspapers related to Pelican Lake and the quagga and zebra mussel issue.
 - b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - c. 410 boats were interdicted, inspected and educated.
 - d. 96 % of boaters were aware of invasive mussel issues; in fact, only 16 of the 410 interviewed boaters were unaware of the quagga and zebra mussel issue.
- 3. Decontaminations & Encrusted Boats
 - a. four boats were decontaminated; all had been used outside of Utah on a quagga or zebra mussel affected water.
 - i. No boats were encrusted with quagga or zebra mussels.
- 4. Boater History of Last Water Visited and Next Destination (410 interviews)

| | |
|--|---|
| <ul style="list-style-type: none"> a. <u>Last Water Visited</u> <ul style="list-style-type: none"> 1. Pelican Lake 77 (19%) 2. Steinaker = 22 3. Red Fleet = 18 | <ul style="list-style-type: none"> b. <u>Next Destination</u> <ul style="list-style-type: none"> 4. Utah Lake = 12 5. Willard Bay = 8 |
|--|---|

1. Pelican Lake 49 (12%)
2. Steinaker = 19
3. Red Fleet = 17

4. Utah Lake = 6
5. Jordanelle = 3

Note: 12% to 19% of the Pelican Lake boaters seem to frequently use Pelican Lake.

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were collected 5 times across summer and sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
 - a. No regional Conservation Officers assisted with the interdiction, inspection and education of boaters during their routine boater/angler checks. Thus, no verbal and written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Red Fleet & Steinaker Reservoirs Complex

1. Budget, Personnel & Equipment
 - a. UDWR \$16,693 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. Central Utah WCD \$20,000 (program E4X541000); 2 technicians assigned June thru August (3 months each) to extend daily hours of coverage.
 - c. Uintah WCD \$12,500 (program E4F500xxx); 1 technician assigned mid May thru mid September (4 months) to extend daily hours of coverage.
Note: This funding effort allowed Red Fleet to experience coverage during all 7 days of the week for 12-14 hours per day. Inclusion of assistance from the AIS Biologist and the Wildlife Technician II, coverage spanned a 9-month period, March thru November.
 - d. One \$13,400 decontamination unit purchased with UDWR funds (program E1A520xxx) in FY08 was shared between Red Fleet & Steinaker.
 - e. One \$65,913 semi-permanent decontamination unit with a reclaim system is being constructed at Red Fleet with NRCS funds (program E4F990xxx) and is expected to be operational by the 2010 boating season.

Note: The existing trailer-mounted decontamination unit at Red Fleet Reservoir will be transferred to Steinaker Reservoir for the 2010 boating season.

2. Outreach
 - a. Several media releases occurred on the radio (2) and in local area newspapers (2) related to the quagga and zebra mussel issue at Red Fleet & Steinaker reservoirs complex.

- b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
- c. 2,666 boats were interdicted, inspected and educated at the Red Fleet & Steinaker reservoirs complex; a nearly 49\51 ratio (1,310 at Red Fleet and 1,356 at Steinaker) between the two waters.
- d. 98.5 % of boaters were aware of invasive mussel issues; in fact, only 41 (20 at Red Fleet and 21 at Steinaker) of the 2,666 interviewed boaters were unaware of the quagga and zebra mussel issue.

3. Decontaminations & Encrusted Boats

- a. All 1,310 boats that used Red Fleet were professionally decontaminated as they left the water; 5 boats arrived needing decontamination.
 - i. No boats either entering or leaving were encrusted with quagga or zebra mussels.
- c. SP&R boats and construction equipment working at Red Fleet were decontaminated prior to leaving the water body.
- b. Four boats entering Steinaker were decontaminated; all had been used within the previous 30 days in North America on a quagga or zebra mussel affected water.
 - i. No boats were encrusted with quagga or zebra mussels.

4a. Boater History of Last Water Visited and Next Destination

* **Red Fleet Reservoir (1,310 interviews)**

a. Last Water Visited

1. Red Fleet = 338 (26%)
2. Steinaker = 301 (23%)
3. Flaming Gorge = 55
4. Starvation = 27
5. Utah Lake = 25

b. Next Destination

1. Red Fleet = 284 (22%)
2. Steinaker = 144 (11%)
3. Flaming Gorge = 45
4. Lake Powell = 14
5. Pelican Lake = 13

Note: 22% to 26% of the Red Fleet boaters seem to frequently use Red Fleet.

4b. Boater History of Last Water Visited and Next Destination

* **Steinaker Reservoir (1,356 interviews)**

a. Last Water Visited

1. Steinaker = 620 (46%)
2. Red Fleet = 67 (5%)
3. Flaming Gorge = 52
4. Pelican Lake = 25
5. Starvation = 18

b. Next Destination

1. Steinaker = 496 (37%)
2. Red Fleet = 79 (6%)
3. Flaming Gorge = 55
4. Pelican Lake = 16
5. Starvation = 11

Note: 37% to 46% of the Steinaker boaters seem to frequently use

Steinaker. Also, Red Fleet and Steinaker have boaters who use only the two reservoir complex. Of the 2,666 boaters who used both lakes, 58% (1,546) frequently use Red Fleet or Steinaker each time they boat.

5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples
 - a. Red Fleet: Plankton samples were collected 5 times across summer and sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative. Additionally, the samples were assessed via PCR by Pisces Molecular in Boulder, CO; they were found to be negative, too.
 - b. Steinaker: Plankton samples were collected in July and sent to the Bureau of Reclamation's microscopy lab in Denver, CO; they were found to be negative.
6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters on occasion during their routine boater/angler checks. Thus, no verbal and written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Starvation Reservoir

1. Budget, Personnel & Equipment
 - a. UDWR \$16,865 (program E1A520xxx); 1 technician assigned May thru September (5 months).
 - b. Central Utah WCD \$20,000 (program E4X541000); 2 technicians assigned June thru August (3 months each) to extend daily hours of coverage.
 - c. One \$13,400 decontamination unit purchased with UDWR funds (program E1A520xxx) in FY07.
2. Outreach
 - a. No media releases occurred on the radio, television or in local area newspapers related to the quagga and zebra mussel issue at Starvation reservoir.
 - b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches.
 - i. UDWR volunteers assisted.
 - c. 782 boats were interdicted, inspected and educated.
 - d. 97% of boaters were aware of invasive mussel issues; in fact, only 23 of the 782 interviewed boaters were unaware of the quagga and zebra mussel issue.
3. Decontaminations & Encrusted Boats
 - a. 8 boats were professionally decontaminated; one was from a quagga or

zebra mussel affected water, and all of the others had boated at Pelican Lake, requesting professional decontaminations prior to leaving for Starvation Reservoir.

i. No arriving boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (782 interviews)

a. Last Water Visited

1. Starvation = 262 (34%)
2. Utah Lake = 44
3. Deer Creek = 38
4. Jordanelle = 38
5. Flaming Gorge = 30

b. Next Destination

1. Starvation = 262 (34%)
2. Flaming Gorge = 58
3. Lake Powell = 55
4. Strawberry = 35
5. Deer Creek = 26

Note: 34% of Starvation boaters seem to frequently use Starvation. 152 boaters said that Starvation was the first water on which they had launched during the 2009 boating season.

5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples

- a. Plankton samples were collected in July and October. They were sent to the Bureau of Reclamation's microscopy lab in Denver, CO; they were found to be negative.

6. Law Enforcement Efforts

- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters on occasion during their routine boater/angler checks. An administrative check point was operated nearby to the reservoir on July 3 along Highway 40. Verbal and written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

SOUTHEASTERN REGION SUMMARY

Prepared by Dan Keller, AIS Biologist

- **Budget, Personnel & Equipment**

- FY10 UDWR & Partner funds amounted to \$191,979 and supported operations for one AIS biologist and 9.5 technicians.
- 967 hours of Law Enforcement were worked, amounting to \$34,511 in operation costs.
- 7 Decontamination units were assigned to the region as follows:
 - 4 trailer-mounted units w/out reclaim systems; each cost \$13,400 and they were purchased by UDWR (project E1A520xxx) across the period of FY07-FY09—Electric Lake, Huntington North, Joe's Valley, Millsite, Scofield (2), Recapture.
 - 2 trailer-mounted units with reclaim systems for Electric Lake and Joe's Valley Reservoir; each cost \$26,511 and they were purchased with NRCS funds (project E4F990xxx) in FY10.
 - **Note:** These units are included in the aforementioned list for Electric Lake and Joe's Valley.
 - 1 semi-permanent unit with reclaim system for Huntington North Reservoir; cost was \$65,913 and it was purchased with NRCS funds (project E4F990xxx) in FY10.
 - **Note:** This unit is included in the aforementioned list for Huntington North.

- **Outreach**

- Public presentations at Utah Boat Show, International Sportsman Expo, 2009 Utah Nonpoint Source Water Quality Conference, NRCS earth day program, College of Eastern Utah biology classes, Nature High Summer Camp.
- Several media releases occurred on the radio and television and in local area newspapers.
- Over 4,484 watercraft were interdicted, inspected for AIS and educated about quagga & zebra mussel issues.
 - 714 hours (0.34 FTE) were worked under authority of UDWR's Volunteer Program, targeting watercraft interdiction, inspection for AIS & education about quagga & zebra mussel issues.
 - 4,484 boater surveys were conducted, showing that 97% of interviewees had heard of and were aware of the quagga & zebra mussel issue.
 - **Note:** This does not mean that they heard and understood about the Decontamination Certification Form.
 - The AIS biologist is certified as a "Level II Water Craft Inspection Trainer." So, "Level I Watercraft Inspection Training" was conducted amongst UDWR, SP&R, natural resource management agencies, Tribal, PacifiCorp, canal companies and marina personnel; two trainings attended by 40 personnel.

- **Decontaminated & Encrusted Boats**

- 313 boats were decontaminated due to them being used on a quagga or zebra mussel affected water in North America within the previous 30 days.
- No boats were discovered to be encrusted with quagga or zebra mussels.
- **Presence/Absence of Quagga & Zebra Mussels**
 - Plankton samples showed no evidence of veligers (microscopic larvae) for quagga or zebra mussels.
 - Negative microscopy & negative PCR also occurred at Electric Lake, which had shown positive for both microscopy & PCR during 2008.
- **Law Enforcement (UDWR Conservation Officers enforced AIS regulations)**
 - 584 contacts
 - No “Notice to Appear” in court citations
 - 3 written warning citations—Generic AIS Rule Violation (0), Failure to Certify Decontamination (1) & Failure to Display Decontamination Certification (2).

SOUTHEASTERN REGION Water-By-Water Reports

Region Wide Operations

One Biologist I position funded for 12 months by UDWR (\$71,567 project E1A520xxx) managed the regional AIS program and supervised the Wildlife Technician II position along with a segment of the Wildlife Technician I positions.

One Wildlife Technician II position funded for 7 months by UDWR (\$28,407 project E1A520xxx) used to rove between regional waters as needed and to supervise a segment of the Wildlife Technician I positions.

- Assigned a \$13,400 decontamination unit (project E1A520xxx, purchased in FY07)
-

Cleveland & Mammoth Reservoirs Complex

1. Budget, Personnel & Equipment
 - a. No specific funding or equipment allocation was provided, but the region AIS biologist and the Wildlife Technician II occasionally visited, making AIS boater contacts. Additionally, the Electric Lake AIS Technician routinely made AIS contacts.
2. Outreach
 - a. Several media releases occurred on the radio (10) or in local area newspapers (4) related to the zebra mussel issue at nearby Electric Lake.
 - b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches. They were also provided to campers in the Huntington Canyon area and nearby water recreation areas, especially to those with float tubes, canoes or pontoon boats.
 - i. UDWR volunteers assisted.
 - c. 112 boats were interdicted, inspected and educated.

- d. 97% of boaters were aware of invasive mussel issues.
3. Decontaminations & Encrusted Boats
 - a. 2 boats were professionally decontaminated; both had been used on nearby Electric Lake, which is affected by zebra mussels.
 - b. No arriving boats were encrusted with quagga or zebra mussels.
4. Boater History of Last Water Visited and Next Destination (43 interviews)

| | |
|---|---|
| <ol style="list-style-type: none"> a. <u>Last Water Visited</u> 1. Mammoth = 18 (42%) 2. Cleveland = 5 (12%) 3. Electric Lake = 4 4. Joe's Valley = 3 5. Scofield = 1 | <ol style="list-style-type: none"> b. <u>Next Destination</u> 1. Mammoth = 14 (33%) 2. Cleveland = 6 (14%) 3. Scofield = 4 4. Joe's Valley = 3 5. Electric Lake = 2 |
|---|---|

Note: 33% to 42% of Mammoth boaters seem to frequently use Mammoth, while 12% to 14% of Cleveland boaters seem to frequently use Cleveland; and 47% to 54% of the boaters seem to frequently use both.
5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
 - a. Plankton samples were collected in the second week of July and sent to the Bureau of Reclamation's microscopy lab in Denver, CO; they were found to be negative.
6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters on occasion during their routine boater/angler checks. Verbal and written warnings (two at Cleveland Reservoir—Failure to Certify Decontamination and Failure to Display Certification--and one at Mammoth Reservoir—Failure to Display Certification) were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Electric Lake

1. Budget, Personnel & Equipment
 - a. UDWR \$24,798 (program E1A520xxx); 2.5 technicians assigned June thru August (3 months each) to provide coverage 7 days per week.
 - b. USFS \$10,244 (program E4F770xxx); 1 technician assigned June thru August (3 months) to extend daily hours of coverage.
 - c. PacifiCorp \$10,244 (program E4F760xxx); 1 technician assigned June thru August (3 months) to extend daily hours of coverage.

Note: This funding effort allowed Electric Lake to experience coverage during all 7 days of the week for 12-14 hours per day. Inclusion of assistance from the AIS Biologist and the Wildlife Technician II, coverage spanned a 5-month period, June thru October.

- d. One \$26,511 decontamination unit with a reclaim system purchased with NRCS funds (program E4F990xxx) in FY10. UDWR's decontamination unit assigned to the roving Wildlife Technician II was used until this acquisition.

2. Outreach

- a. Several media releases occurred on the radio (10) or in local area newspapers (4) related to the zebra mussel issue at Electric Lake.
- b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches. They were also provided to campers in the Electric Lake area and nearby water recreation areas, especially to those with float tubes, canoes or pontoon boats.
 - i. UDWR volunteers assisted.
- c. 273 boats were interdicted, inspected and educated.
- d. 97.5% of boaters were aware of invasive mussel issues.
- e. 70% understood the "Clean, Drain & Dry" message.

3. Decontaminations & Encrusted Boats

- a. Most boats (207) that used Electric Lake were professionally decontaminated as they left the water; no boats arrived needing decontamination.
- b. No boats either entering or leaving were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (171 interviews)

a. Last Water Visited

- 1. Electric Lake = 59 (35%)
- 2. Scofield = 38
- 3. Mammoth = 12
- 4. Strawberry = 11
- 5. Utah Lake = 8

b. Next Destination

- 1. Electric Lake = 54 (32%)
- 2. Scofield = 42
- 3. Strawberry = 21
- 4. Mammoth = 15
- 5. Cleveland = 8

Note: 32% to 35% of Electric Lake boaters seem to frequently use Electric Lake.

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples

- a. Plankton samples were collected 3 times in July and August, then sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative. Additionally, the samples were assessed via PCR by Pisces Molecular in Boulder, CO; they were found to be negative, too.

6. Law Enforcement Efforts

- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters on occasion during their routine

boater/angler checks. Verbal and written warnings were given to boaters that were non-compliant with the self certification process. No “Notice to Appear” in court citations were issued.

Huntington North Reservoir

1. Budget, Personnel & Equipment

- a. UDWR \$16,693 (program E1A520xxx); 1 technician assigned May thru September (5 months) to provide coverage 40 hours per week.
- b. One \$13,400 trailer-mounted decontamination unit without a reclaim system was purchased with UDWR’s funds (program E1A520xxx) in FY07.
- c. One \$65,913 semi-permanent decontamination unit with a reclaim system is being constructed at Huntington North with NRCS funds (program E4F990xxx) and is expected to be operational by the 2010 boating season.

Note: The existing trailer-mounted decontamination unit at Huntington North Reservoir will be transferred to Recapture Reservoir for the 2010 boating season. Currently, no decontamination units are available in Grand and San Juan counties.

2. Outreach

- a. Several media releases occurred on the radio (10) or in local area newspapers (4) related to the zebra mussel issue at Electric Lake.
- b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches. They were also provided to campers in the Huntington North and Huntington Canyon areas and nearby water recreation areas, especially to those with float tubes, canoes or pontoon boats.
 - i. UDWR volunteers assisted.
- c. The Emery Water Conservation District posted Aquatic Invasive Species outreach messages and reminders on their web page which is used widely by recreationists looking up water levels and flows.
- d. 987 boats were interdicted, inspected and educated.
- e. 97% of boaters were aware of invasive mussel issues.

3. Decontaminations & Encrusted Boats

- a. 55 arriving boats were professionally decontaminated prior to launch.
- b. No arriving boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (297 interviews)
 - a. Last Water Visited
 1. Huntington North = 126 (42%)
 2. Lake Powell = 40
 3. Joe's Valley = 28
 4. Scofield = 24
 5. Millsite = 22
 - b. Next Destination
 1. Lake Powell = 62 (19%)
 2. Huntington North = 56
 3. Joe's Valley = 34
 4. Scofield = 32
 5. Millsite = 25

Note: 19% to 42% of Huntington North boaters seem to frequently use Huntington North. They also show a strong affinity for use at Lake Powell.

5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples
 - a. Plankton samples were collected 3 times—June, July and August—and sent to the Bureau of Reclamation's microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters on occasion during their routine boater/angler checks. Verbal and written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued.

Joe's Valley Reservoir

1. Budget, Personnel & Equipment
 - a. UDWR \$16,693 (program E1A520xxx); 1 technician assigned May thru September (5 months) and shared between Joe's Valley and Millsite to provide coverage 40 hours per week.
 - b. Emery WCD \$10,244 (program E4F790xxx); 1 technician assigned June thru August (3 months) and shared between Joe's Valley & Millsite to extend daily hours of coverage.
 - c. One \$13,400 trailer-mounted decontamination unit without a reclaim system was purchased with UDWR's funds (program E1A520xxx) in FY07 and shared between Joe's Valley & Millsite.
 - d. One \$26,511 trailer-mounted decontamination unit with a reclaim system was purchased with NRCS funds (project E4F990xxx) in FY10 for Joe's Valley Reservoir.

Note: The existing trailer-mounted decontamination unit at Joe's Valley Reservoir will be transferred to Millsite Reservoir for the 2010 boating season.

2. Outreach
 - a. Several media releases occurred on the radio (10) or in local area

- newspapers (4) related to the zebra mussel issue at Electric Lake.
 - b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches. They were also provided to campers in the Joe’s Valley and Millsite area and nearby water recreation areas, especially to those with float tubes, canoes or pontoon boats.
 - i. UDWR volunteers assisted.
 - c. The Emery Water Conservation District posted Aquatic Invasive Species outreach messages and reminders on their web page which is used widely by recreationists looking up water levels and flows.
 - d. 627 boats were interdicted, inspected and educated.
 - e. 99% of boaters were aware of invasive mussel issues.
3. Decontaminations & Encrusted Boats
- a. 36 arriving boats were professionally decontaminated prior to launch.
 - b. No arriving boats were encrusted with quagga or zebra mussels.
4. Boater History of Last Water Visited and Next Destination (627 interviews)
- | | |
|--|--|
| <p>a. <u>Last Water Visited</u></p> <ul style="list-style-type: none"> 1. Joe’s Valley = 277 (44%) 2. Utah Lake = 69 3. Cleveland/Mammoth = 53 4. Lake Powell = 33 5. Scofield = 24 | <p>b. <u>Next Destination</u></p> <ul style="list-style-type: none"> 1. Joe’s Valley = 190 (30%) 2. Utah Lake = 20 3. Cleveland/Mammoth = 16 4. Millsite = 12 5. Lake Powell = 11 |
|--|--|
- Note: 30% to 44% of Joe’s Valley boaters seem to frequently use Joe’s Valley.**
5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples
- a. Plankton samples were collected 3 times during July and August, then sent to the Bureau of Reclamation’s microscopy lab in Denver, CO; all were found to be negative.
6. Law Enforcement Efforts
- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters on occasion during their routine boater/angler checks. Verbal and written warnings were given to boaters that were non-compliant with the self certification process. No “Notice to Appear” in court citations were issued.

Millsite Reservoir

- 1. Budget, Personnel & Equipment
 - a. UDWR \$16,693 (program E1A520xxx); 1 technician assigned May thru September (5 months) and shared between Joe’s Valley and Millsite to provide coverage 40 hours per week.
 - b. Emery WCD \$10,244 (program E4F790xxx); 1 technician assigned

June thru August (3 months) and shared between Joe's Valley & Millsite to extend daily hours of coverage.

Note: The region's roving Wildlife Technician II and UDWR Volunteers provided additional, significant assistance for coverage at Millsite.

- c. One \$13,400 trailer-mounted decontamination unit without a reclaim system was purchased with UDWR's funds (program E1A520xxx) in FY07 and shared between Joe's Valley & Millsite.

Note: The existing trailer-mounted decontamination unit shared between Joe's Valley & Millsite reservoirs will be transferred to Millsite Reservoir for the 2010 boating season.

2. Outreach

- a. Several media releases occurred on the radio (10) or in local area newspapers (4) related to the zebra mussel issue at Electric Lake.
- b. "Zap the Zebra" brochures as reminders about "Clean, Drain & Dry" and "Decontamination Certification Forms" were given to boaters at water body gate entrances and boat launches. They were also provided to campers in the Millsite and Joe's Valley areas and nearby water recreation areas, especially to those with float tubes, canoes or pontoon boats.
 - i. UDWR volunteers assisted.
- c. The Emery Water Conservation District posted Aquatic Invasive Species outreach messages and reminders on their web page which is used widely by recreationists looking up water levels and flows.
- d. 230 boats were interdicted, inspected and educated.
- e. 98% of boaters were aware of invasive mussel issues.

3. Decontaminations & Encrusted Boats

- a. No arriving boats needed to be professionally decontaminated prior to launch.
- b. No arriving boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (128 interviews)

a. Last Water Visited

- 1. Millsite = 82 (64%)
- 2. Huntington North = 17
- 3. Scofield = 8
- 4. Utah Lake = 7
- 5. Joe's Valley = 5

b. Next Destination

- 1. Millsite = 35 (27%)
- 2. Lake Powell = 11
- 3. Joe's Valley = 8
- 4. Huntington North = 7
- 5. Utah Lake = 3

Note: 27% to 64% of Millsite boaters seem to frequently use Millsite.

5. Assessment for Presence/Absence of *Dreissena veligers* via Plankton Samples

- a. One plankton samples was collected during June, then sent to the Bureau of Reclamation's microscopy lab in Denver, CO; it was found to be negative.

6. Law Enforcement Efforts

- a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters on occasion during their routine boater/angler checks. Verbal and written warnings were given to boaters that were non-compliant with the self certification process. No “Notice to Appear” in court citations were issued.

Scofield Reservoir

1. Budget, Personnel & Equipment

- a. UDWR \$16,990 (program E1A520xxx); 1 technician assigned May thru September (5 months) to provide coverage 40 hours per week.
Note: The region’s AIS Biologist, roving Wildlife Technician II and UDWR Volunteers provided additional, significant assistance for coverage at Scofield.
- b. One \$13,400 trailer-mounted decontamination unit without a reclaim system was purchased with UDWR’s funds (program E1A520xxx) in FY07.

2. Outreach

- a. Several media releases occurred on the radio (10) or in local area newspapers (4) related to the zebra mussel issue at Electric Lake.
- b. “Zap the Zebra” brochures as reminders about “Clean, Drain & Dry” and “Decontamination Certification Forms” were given to boaters at water body gate entrances and boat launches. They were also provided to campers in the Scofield area and nearby water recreation areas, especially to those with float tubes, canoes or pontoon boats.
 - i. UDWR volunteers assisted.
- c. 2,255 boats were interdicted, inspected and educated.
- d. 95% of boaters were aware of invasive mussel issues.

3. Decontaminations & Encrusted Boats

- a. 13 arriving boats needed to be professionally decontaminated prior to launch.
- b. No arriving boats were encrusted with quagga or zebra mussels.

4. Boater History of Last Water Visited and Next Destination (684 interviews)

a. Last Water Visited

1. Scofield = 356 (52%)
2. Utah Lake = 100
3. Strawberry = 69
4. Deer Creek = 63
5. Jordanelle = 43

b. Next Destination

1. Scofield = 186 (27%)
2. Strawberry = 60
3. Utah Lake = 56
4. Lake Powell = 29
5. Jordanelle = 21

Note: 27% to 52% of Scofield boaters seem to frequently use Scofield.

5. Assessment for Presence/Absence of *Dreissena* veligers via Plankton Samples
 - a. One plankton sample was collected during July, then sent to the Bureau of Reclamation's microscopy lab in Denver, CO; it was found to be negative.
6. Law Enforcement Efforts
 - a. Regional Conservation Officers assisted with the interdiction, inspection and education of boaters on occasion during their routine boater/angler checks. Verbal and written warnings were given to boaters that were non-compliant with the self certification process. No "Notice to Appear" in court citations were issued. Additionally, an administrative check point was conducted on SR 96 just north of Scofield Reservoir on 8/8/09. A total of 154 vehicles were stopped and educated about AIS. Those with boats were inspected.